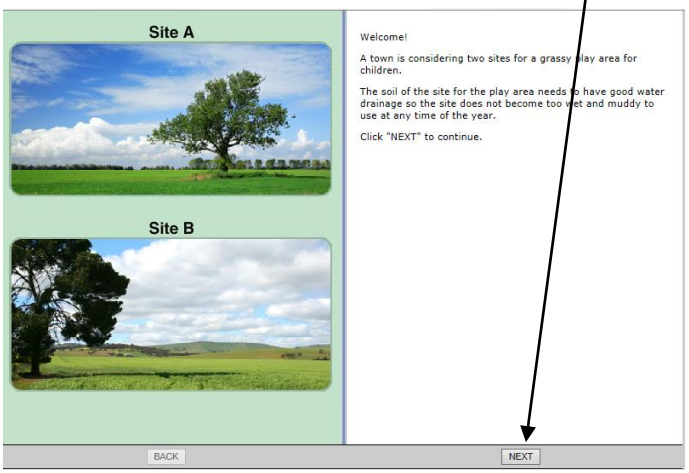
Student Activity Guide for NAEP Interactive Science Task: Playground Soil

http://www.nationsreportcard.gov/science_2009/ict_tasks.asp

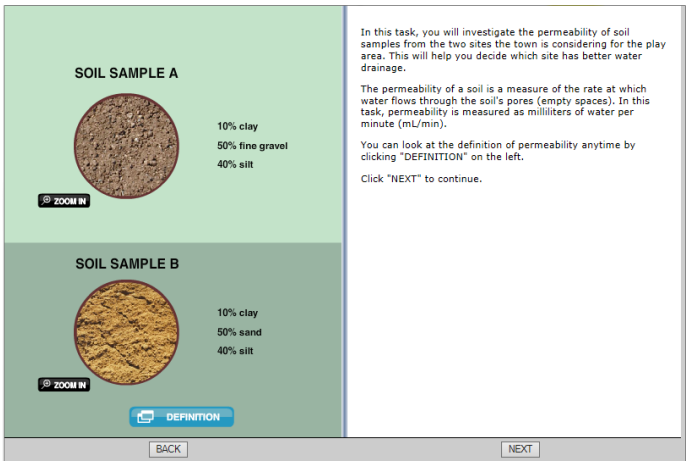
Select “Take this task” under Playground Soil.

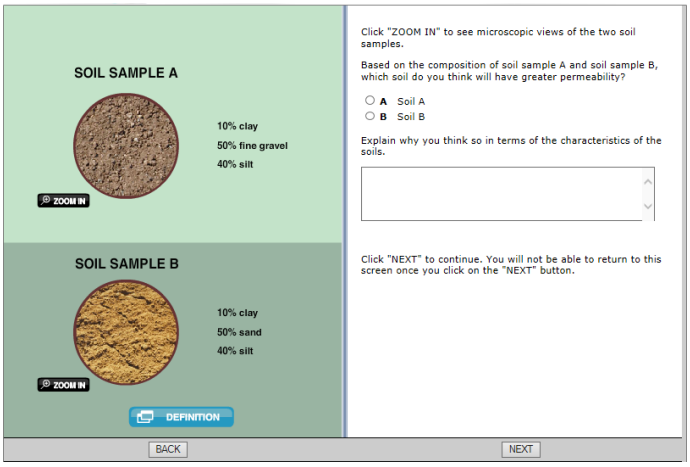
In this task, you will investigate the permeability of soil samples from two sites a town is considering for a play area. You will use their results to help decide which site has the better water drainage and is therefore the better place for a grassy play area.

Read the information on each screen. Select “NEXT” when you have finished reading the information on the screen.



This task comes from the National Assessment of Educational Progress (NAEP), commonly referred to as “the Nation’s Report Card.” NAEP is the largest nationally representative and continuing assessment of what America’s students know and can do in various subject subjects. For more information, go to http://www.nationsreportcard.gov/.





When there is a question, write your answer on this worksheet, not on the computer screen. If you answer directly on the computer, your answer will not be saved. You do not need to answer anything directly on the computer. After answering, select "NEXT" to continue.

Question 1

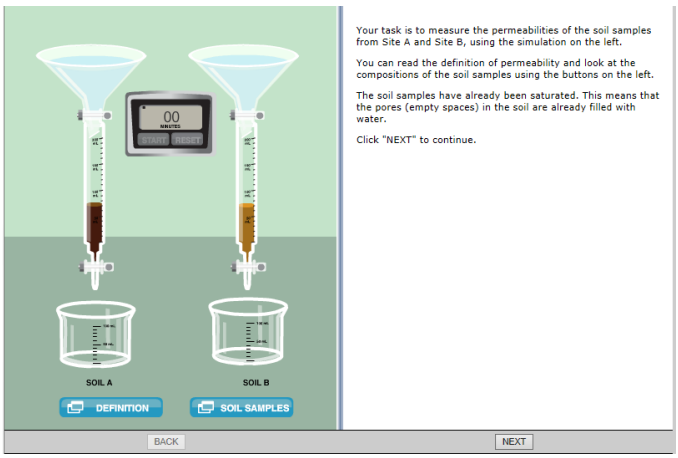
Based on the composition of soil sample A and soil sample B, which soil do you think will have greater permeability?
A. Soil A
B. Soil B

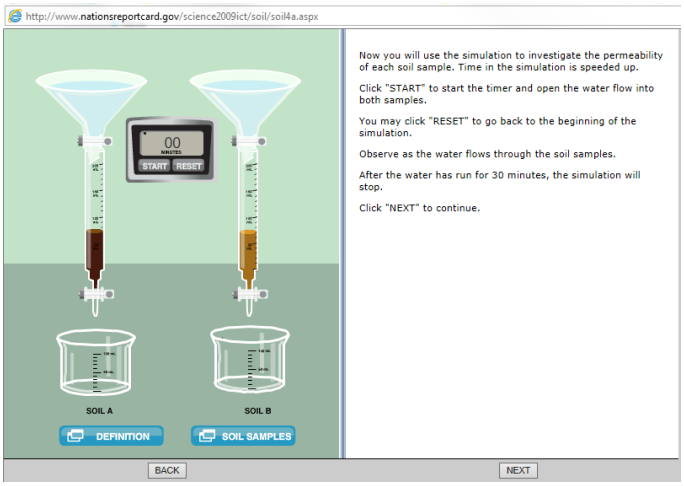
Explain why you think so in terms of the characteristics of the soils.

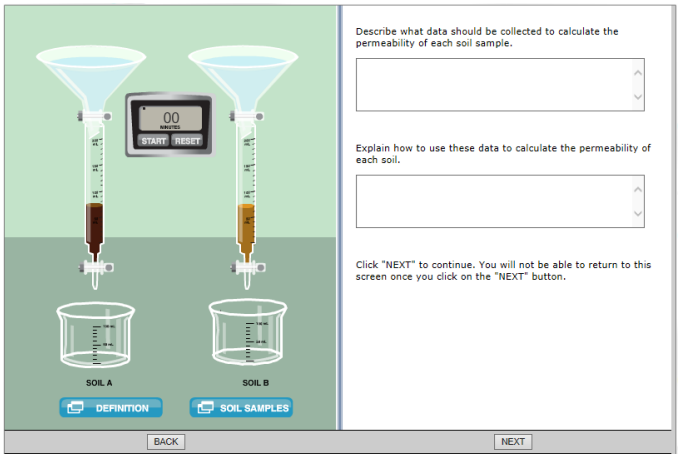
_____

_____

_____







Question Two

Describe what data should be collected to calculate the permeability of each soil sample.

_____

_____

_____

Explain how to use these data to calculate the permeability of each soil.

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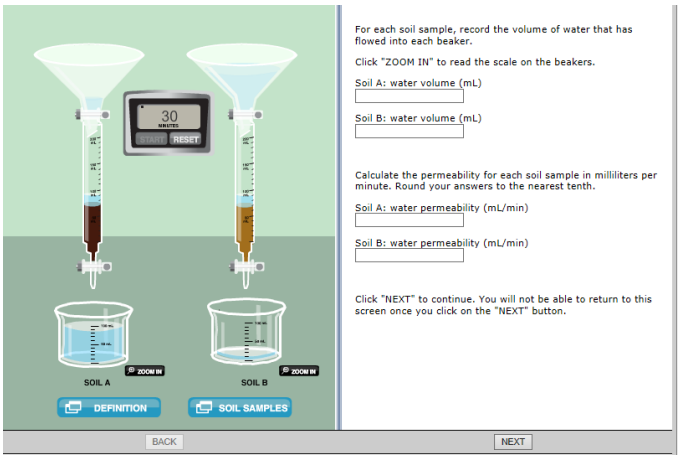
_____



Question Three

For each soil sample, record the volume of water that has flowed into each beaker.

Click “ZOOM IN” to read the scale on the beakers.

Soil A: water volume (mL)

_____

Soil B: water volume (mL)

_____

Question Four

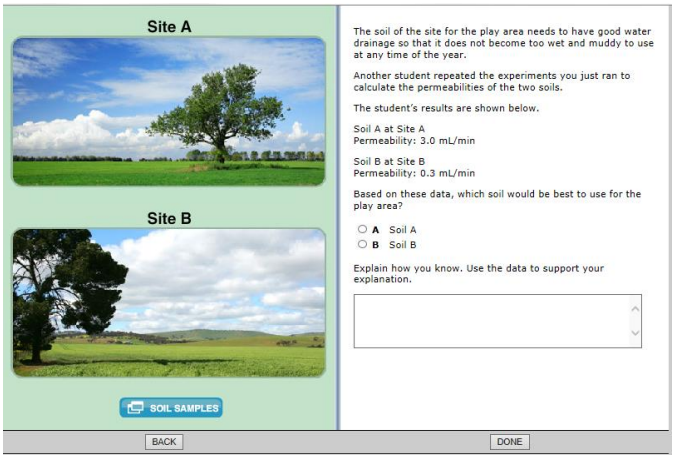
Calculate the permeability for each soil sample in milliliters per minute. Round answers to the nearest tenth.

Soil A: water permeability (mL/min)

_____

Soil B: water permeability (mL/min)

_____



Question Five

The student's results are shown below.

Soil A at Site A
Permeability: 3.0 mL/min

Soil B at Site B
Permeability: 0.3 mL/min

Based on these data, which soil would be best to use for the play area?

A. Soil A
B. Soil B

Explain how you know. Use the data to support your explanation.

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_____

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